

14. *Pseudocolapsis splendidula*.

P. læte æneo-cuprea, grosse sed breviter argenteo pubescens, dense punctata; antennis longiusculis, rufescentibus, apicem versus plus minus obscurioribus; pedibus rufescentibus.

Long. corp. lin. $1\frac{1}{2}$ –2.

Habitat in Canaria, Palma et Hierro, ad flores *Cistorum* in locis inferioribus et subinferioribus degens.

Fam. Ulomidæ.

Genus HYPOPHLÆUS.

Fabricius, Skrivt. af Nat. Selsk. (1790).

15. *Hypophlæus nocivus*.

H. subcylindrico-linearis, rufo-ferrugineus, parum nitidus; capite prothoraceque sat dense punctulatis, hoc convexo elongato-subquadrato, antice et postice æqualiter (sed vix) angustiore; oculis magnis, obliquis, nigris; elytris parallelis, parcius leviusque punctulatis, obsoletissime (vix perspicue) substriatis, ad apicem truncatis, pygidium haud tegentibus; antennis brevissimis, crassis, fusiformibus; pedibus rufo-testaceis.

Long. corp. lin. $1\frac{1}{2}$ – $1\frac{2}{3}$.

Habitat in pinetis Teneriffæ et Palmæ, arbores emortuas antiquas perforans.

XLVII.—*Notes on the Possibility of the Embryos of the Guinea-Worm and so-called "Fungus-Disease" of India, respectively, entering the Human Body through the Sudorific Ducts.* By H. J. CARTER, F.R.S.*

IN my "Observations on *Dracunculus*," published in the 4th Number of the 'Transactions' of the Society (New Series)†, I have stated, at page 217, that the young Filaridæ of the free species, which abound in the Island of Bombay during the "rains," and throughout the year in most of the tanks, "might pass into the human body through the skin direct, or indirectly through the ducts of the sudorific glands, the latter being much larger in calibre (viz. 1-1200th of an inch) than these young Filaridæ,"—assuming that *Dracunculus*, when fully developed in the human body, is a monster-growth of a worm whose natural habitat is out of the body, that the young ones which it then brings forth are too delicate to maintain an independent existence, and thus unable to propagate the species, and that, therefore, the Guinea-worm is introduced.

No case, however, has yet occurred where a young *Filaria* of

* Communicated by the author, having been read in part before the Medical and Physical Society of Bombay on the 5th of October, 1861.

† Ann. & Mag. Nat. Hist. ser. 3. vol. iv. pp. 28, 98.

the free species has been found entering, or in, one of the sudorific ducts; so this is still an assumption; but having met with an instance in which young Filaridæ were found entering a fungus by analogous apertures on the surface, even smaller than those of the sudorific ducts, it seems desirable that the facts should be recorded to show that, at least in the vegetable kingdom, this kind of entrance takes place.

I have formerly stated that the free microscopic Filaridæ chiefly frequent the gelatinous Algæ for breeding, and also for food; and now I can add that myriads also accompany almost every species of large fungus for the same purpose. The number of microscopic worms, together with the larvæ of insects, to which the fungi give nourishment is incredible; and it was on the surface of a large species of *Sphæria* that I observed the fact to which I have above alluded, and of which the following is a description:—

While examining some specimens of the large digitiform *Xylaria* which grows on the decaying trunks of Tamarind-trees, &c., some delicate, glistening, thread-like bodies were seen to project from the summits of the conceptacles (one from each), and to be waving with such an animal motion that I thought it desirable to ascertain their real nature; so, having collected two or three on the point of a needle for this purpose, they were transferred to a little water on a glass slide, and placed under a microscope, when they were found to be young Filaridæ, but too undeveloped for their species to be determined.

The conceptacles are little globe-shaped sacs, imbedded in and scattered over the surface of the fungus, upon which they open by minute mouths or ostioles, respectively, which, when measured, were found not to exceed the 1-1880th part of an inch in diameter (so that they are smaller than the orifices of the sudorific ducts of the human body); and from each of these ostioles was projecting a single *Filaria*—the head in the conceptacle.

If, then, it be possible for these little embryo-worms to enter such small apertures for food in one organic being, it may fairly be inferred that others may do so in another; and hence the possibility, if not probability, of the Guinea-worm in the human subject being a monstrous development of a particular species of one of the free Filaridæ, which also enters the human body in an embryonal form for food, through the sudorific ducts—assuming, as before stated, that, indeed, which is almost a certainty, viz. that the young of *Dracunculus* are too delicate to maintain an independent existence, and therefore cannot propagate the species, which must thus obtain its perpetuity and come from some other source.

(Turning to another subject.—To those who are interested in seeing how the fungi follow in their propagation the law of all other organized beings, the species of *Xylaria* to which I have above alluded may form a beautiful example; for it presents on its surface conceptacles of two kinds, viz. one (the female) bearing thecae filled with sporidia, and the other (the male) bearing a bunch of filaments surmounted by spermatia or conidia. It is necessary, however, not to confound this *Xylaria* with another species of *Sphaeria* which often accompanies it, viz. an *Hypoxyton*. The former is brown when fresh, dentiform, digitiform or clavate, with no definite internal structure; the latter blackish brown, globose, convex, and sessile, presenting a concentric laminated structure internally, and throwing off a dark-black, indigo-blue powder when mature, which consists of the sporidia. Both may exceed in size the fingers and the fist respectively.)

“*Fungus-Disease.*”—Again, the black fungus described by my namesake (Dr. H. V. Carter) in the last number of the ‘Transactions’ (No. VI.), which commits such devastation in the bones and soft parts of the feet and ankles almost exclusively, and ultimately attains, in spheroidal masses, the diameter of half an inch, may also, in an embryo state, that is, in the form of a zoospore, like an *Amæba*, enter the body through one of the sudorific ducts; for microscopic examination of fresh, young and favourable specimens of this undoubted fungus has led me to infer that it is most nearly allied to the Mucoridæ, ex. gr. *Mucor stolonifer*, Ehr. (the black-headed, pin-shaped fungus that grows over paste), which we shall presently see is most probably propagated in this way. This *Mucor* is closely allied to *Achlya*, which has been viewed by some as merely an aquatic form of it, so much are the two alike (ex. gr. the fungus which grows out from dead grasshoppers and insects generally when undergoing decomposition in water). Closely allied to *Achlya*, again, are the “water-fungi” which grow in and out through the cells of all *Algæ*, to which I have long called attention in the Characæ, &c. (Ann. and Mag. Nat. Hist. 1856), and which lately have been named by Pringsheim “*Pythium*” (Ann. des Sc. Nat. t. xi. p. 370, Bot. 1859): ex. gr. *Pythium entophyllum*, which breeds in and about the cells of *Spirogyra* after the latter has been removed from its habitat, and kept in a basin of water until it begins to perish. Lastly, all these are allied to the great fungus family of Myxogastres, for which now the name of “Myxozoa” has been proposed by M. Antoine de Bary (Ann. des Sc. Nat. t. xi. p. 150, Bot. 1859), partly on account of their embryos or propagative germs being locomotive—that is, polymorphic cells (minute *Amæbæ*), provided with one or two cilia, so that they can swim with the latter when in water, or creep

about by means of their polymorphic moto-plastic cell when on wet surfaces (under the form of *Amœbæ*). Now *Mucor*, *Achlya*, *Pythium*, and the Myxogastres all being allied to each other by this mode of propagation (that is, by minute amœbous or moto-plastic cells), we are not wanting in Fungi which produce embryonal forms that, if any of them chose to enter the human body, have the power, under the condition and circumstances above mentioned, to do so as easily through the sudorific ducts (or even directly, through the skin itself, for they have wonderful penetrating power) as an embryonal *Filaria*.

I would also add my opinion that the black fungus of the human body is a monster-form—from its sporangia, or large cells apparently identical with sporangia, never, to my knowledge, containing anything but an amorphous albuminous mass (abortive state of sporidia, which is chiefly the seat of the black colouring-matter, and ultimately becomes resinous or fatty?),—and thus that this fungus is no more capable of putting forth a true embryo which can propagate the species from one human body to another, or even out of the body, than the Guinea-worm; and that the natural habitat of the species is therefore, like that of the Guinea-worm, out of the body.*

It may, perhaps, be asked how I come to place *Mucor stolonifer* among the fungi which are propagated by polymorphic zoospores. My reply is, that I have met with a case in which

* I take from my "Note-book" the following short description of this fungus, which on a late occasion (28th September 1861) I examined half an hour after the amputation of the foot in which it was situated, with my namesake, who has the merit of having first pointed out its real nature in the Article to which I have above alluded, and to which I would direct attention for a more elaborate account of the disease, &c. :—

Foot.—Greatly enlarged, presenting several small cloacal orifices connected with branched sinuses originating around globular, black or dark-brown masses, ranging in size from microscopic minuteness to upwards of half an inch in diameter, situated in the bones and deep soft parts of the foot and ankle.

Black masses.—Globular, presenting a cauliflower surface, and breaking up with a like structure radiating from the centre; composed of short, irregular filaments of concatenated unequal-sized cells, bearing on their sides and ends larger ones (abortive spores?), which at first are pear-shaped, but afterwards become globular, filled with a homogeneous (albuminous?) substance coloured brown, which, swelling out the cell, appears to burst it, and, thus becoming free, affords the principal part of the colouring-matter and substance of the mass.

Iodine gives a deep claret-colour to the contents of the large cells (spores?), indicative of their amylaceous nature, and a deep sherry- or amber-colour to the rest of the structure, among which I observed starch-grains that appeared to me to belong to the fungus.

The best portions for illustrating this structure are the smallest and least coloured, not those which come from the large dark masses, for they seldom present much beyond homogeneity and colour.

many of the heads of *M. stolonifer* were composed of a mass of minute polymorphic cells (*Amæbæ*), which, after having been placed in water on a slide, soon separated from their globular aggregation, and crept away from each other under moto-plastic forms, which forms, under other circumstances, I assume, would have respectively been surrounded by firm, sporidious capsules, and, on the latter bursting in development, would have come forth as propagative amœbous germs or embryos, like those which come from the sporidia of the Myxogastres, with which family Corda has already placed the Mucoridæ, though not probably from the circumstance just mentioned, but from their general resemblance (Corda, *Icones Fungorum*, p. 19; and *Mucor stolonifer* seu *Rhizopus nigricans*, p. 20, tab. xii. fig. 83)*.

XLVIII.—*Contributions to an Insect Fauna of the Amazon Valley.*

COLEOPTERA : LONGICORNES. By H. W. BATES, Esq.

[Continued from p. 405.]

Group *Anisocerinæ*.

Genus TRIGONOPEPLUS, Thoms.

Thomson, *Class. des Céramb.* p. 339.

THIS genus is an aberrant form in the group *Anisocerinæ*, differing from most of the other genera in having the terminal joint of the antennæ, compared with the penultimate, of normal length, and the elytra obtusely truncated at the tip, instead of rounded. It resembles the genus *Chalastinus* so much in general form that I have thought it better to place it in this group. The third and three following joints of the antennæ are slender and slightly thickened at the tips; this indicates an affinity with the *Anisocerinæ*, where the thickening of the tips of the antennal joints is a very general character. The typical species of *Trigonopeplus* (*T. signatipennis*, Thoms., a native of South-east Brazil) has a deep semioval notch in the middle of the epistome—a singular peculiarity of

* Familiar examples of these fungi are given, that the reader may the more easily procure them for examination. Abundance of the Myxogastres may be found on the dead wood in the building-timber and fire-wood yards during the monsoon, among which is the *Æthalum* or creeping-fungus," which, under the microscope, by transmitted light, affords one of the most wonderful objects in the world. To obtain this, look among the chips and sawdust of the astringent woods during the "rains," and having found a yellow- or a brown-coloured slime, take a piece of it, about half the size of a pea, and place it in a watch-glass with a little water; afterwards put the glass in a shaded or dark place for a few hours, when the *Æthalum* will, if young and fresh, have passed into an arborescent form fit for observation.